

STATISTICAL ANALYSIS AND TEACHING

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I design field studies, analyze the data they produce, and report the results so that the people who manage land can use them. From 2013 to 2025 I taught wildlife population dynamics, estimation, and modeling at Texas Tech University (page 3), and I was directly involved in the statistical work on all 33 refereed journal articles on page 2, from designing the study to reviewing the results. I work in frequentist, information-theoretic, and Bayesian frameworks, primarily in SAS [†], and also in R, BUGS, and Python; I rebuilt my course materials in those three before the AI boom.

THE ANALYSES

Survival and demography	Nest, brood, and adult survival in Program MARK, including staggered-entry known-fate models and nest survival models with time trends [4, 8, 9, 10, 11, 13, 14, 21, 29, 38]; band-recovery models of survival and harvest by age [3]; joint live-recapture, live-resight, and tag-recovery models [1, 37]; cause-specific mortality [10]; open-population N-mixture models of abundance, survival, and recruitment [18]; Bayesian integrated population models that join aerial surveys, ground surveys, and demographic studies by Markov melding, fitted by multistage Markov chain Monte Carlo [33].
Density and abundance	Line-transect distance sampling with covariate detection models and bootstrap intervals [27]; abundance estimated from repeated lek counts [18].
Model selection	Candidate model sets ranked by AIC or AICc [1, 2, 3, 4, 8, 10, 11, 13, 14, 18, 21, 27, 29, 34]; model averaging [2, 4, 8, 11, 13, 14, 21]; variable importance from summed Akaike weights [11, 21]; backward selection by analysis of deviance [13].
Habitat and resource selection	Resource selection functions from generalized linear mixed models with paired random points [8]; use-availability designs I to III [13, 17, 20, 34, 38], with selection ratios [17, 20] and chi-square tests of use against availability [13, 27, 34, 38]; compositional analysis at three spatial scales [37]; used-available selection models [24]; logistic regression of nest and brood sites [13, 29]; Monte Carlo tests of nest distances from roads and other structures, for setback distances [8]; brood-site invertebrates modeled against vegetation [38].
Space use and movement	Kernel and minimum convex polygon ranges [1, 2, 35, 37]; Brownian bridge movement models [17, 19, 20] and dynamic Brownian bridge models [22]; first passage time and behavioral change-point segmentation of GPS tracks [22, 28]; migration corridors and stopover areas [19]; site fidelity [1, 37]; screening and mapping of satellite GPS telemetry [12, 36].
Networks and connectivity	Migration networks weighted by the cost of movement, with betweenness, degree, and effective resistance, and node-removal simulations of network resilience [22]; lek networks with coalescence distance, transitivity, hub scores, betweenness, and cutpoints [26], and at six distance thresholds [31]; least-cost paths and circuit theory across resistance surfaces, under scenarios of Conservation Reserve Program loss and new wind energy [26].
Distribution and remote sensing	Maxent species distribution models in SAHM [15]; GIS analysis of species co-occurrence [7]; Landsat time series: wetland surface water and hydroperiod [22, 28], fall tillage from a soil index [22], and land-cover classification with change detection, accuracy assessment, and fragmentation [25].
Machine learning	Random forest regression and classification [22, 25, 28, 31], with permutation variable importance and bootstrap confidence intervals [22], cross-validation [28, 31], tuning by grid search [31], and SHAP values to explain the predictions [31].
Climate and microclimate	Downscaled climate projections with 1,000-run simulations of reproduction and nest survival [4, 38]; analysis of nest microclimate [14, 34], with nest and air temperatures compared by factorial ANOVA and thermal-stress behavior (gular flutter) modeled by logistic regression on air temperature and humidity [34], and microclimate thresholds for nest survival [14]; weather and drought covariates in demographic models [18, 21].
Synthesis	Random-effects meta-analysis with heterogeneity tests and bootstrap intervals [5].
Experiments and comparisons	Randomized treatment and control designs [9, 13]; a ten-year herbicide and grazing experiment [13, 16, 34]; postfire herbicide treatments compared for an invasive shrub and for plant and arthropod diversity [32]; analysis of covariance with precipitation covariates chosen by AICc [34]; ANOVA, MANOVA, and repeated-measures ANOVA [1, 8, 13, 18, 21, 23, 34], with Tukey comparisons [13, 23]; generalized linear mixed models [8, 29]; generalized additive models [4]; log-linear models [10, 11]; chi-square and t-tests [1, 6, 7, 8, 13, 17, 27, 29]; nonparametric tests: Kruskal-Wallis with Dunn's tests [22, 30], Wilcoxon and Kendall trend tests [22, 28], and Fisher's exact tests [30]; LOESS curves of seasonal activity [30].
Behavior	Focal-animal activity budgets [6]; mating skew indices and discrete choice models of mating success [2].

THE PAPERS

Numbers match the brackets on page 1. Titles are shortened to their subject; the journal, volume, and pages identify each paper, and the papers are listed on my Google Scholar and ResearchGate profiles.

† SAS. If you just thought “whhhhhhy?” in your head: so graduate students couldn’t use it even if they got their hands on it.

Refereed journal articles

- 1 Grisham and others 2008. *Proceedings of the Southeastern Association of Fish and Wildlife Agencies* 62:70–76. Male Wild Turkey space use and survival.
- 2 Behney and others 2012. *The Wilson Journal of Ornithology* 124:96–105. Sexual selection and mating chronology, Lesser Prairie-Chicken.
- 3 Chamberlain and others 2012. *Journal of Wildlife Management* 76:907–910. Spring harvest regimes and male Wild Turkey survival, Louisiana.
- 4 Grisham and others 2013. *PLoS ONE* 8:e68225. Climate change and reproduction, Lesser Prairie-Chicken.
- 5 Hagen and others 2013. *Wildlife Society Bulletin* 37:750–758. Nesting and brood-rearing habitat, Lesser Prairie-Chicken.
- 6 Navarrete and others 2013. *Journal of Caribbean Ornithology* 26:17–21. Diurnal activity of Black-necked Stilts.
- 7 Skipper and others 2013. *IRCF Reptiles & Amphibians* 20:7–15. Feral sheep and stout iguanas, Guana Island.
- 8 Grisham and others 2014. *Journal of Wildlife Management* 78:857–866. Nesting ecology and nest survival, Lesser Prairie-Chicken, Texas.
- 9 Buckley and others 2015. *Wildlife Society Bulletin* 39:301–309. Supplemental feed, home range, and survival, Northern Bobwhite.
- 10 Grisham and Boal 2015. *Wildlife Society Bulletin* 39:536–542. Causes of mortality and breeding-season survival, Lesser Prairie-Chicken.
- 11 Grisham and others 2015. *Journal of Fish and Wildlife Management* 6:318–326. Capture technique, trap injury, and survival, Lesser Prairie-Chicken.
- 12 Collins and others 2016. *Journal of Fish and Wildlife Management* 7:141–152. New summer areas and mixing of two Greater Sandhill Crane populations.
- 13 Fritts and others 2016. *Journal of Wildlife Management* 80:527–539. Long-term nest ecology under grassland management, Lesser Prairie-Chicken.
- 14 Grisham and others 2016. *The Condor* 118:728–746. Nest microclimate thresholds, Lesser Prairie-Chicken.
- 15 Jarnevich and others 2016. *Avian Conservation and Ecology* 11(1):2. Range-wide habitat suitability, Lesser Prairie-Chicken.
- 16 Zavaleta and others 2016. *The Southwestern Naturalist* 61:225–232. Herbicide and grazing restoration, sand shinnery oak prairie.
- 17 Kruse and others 2017. *Journal of Fish and Wildlife Management* 8:436–448. Summer habitat selection, Greater Sandhill Cranes.
- 18 Fritts and others 2018. *Ecology and Evolution* 8:9550–9562. Drought and grazing, Lesser Prairie-Chicken.
- 19 Conring and others 2019. *Avian Conservation and Ecology* 14(1):11. Migratory strategy, Greater Sandhill Cranes.
- 20 Harryman and others 2019. *Journal of Fish and Wildlife Management* 10:126–136. Multiscale habitat selection, Lesser Prairie-Chicken.
- 21 Raleigh and others 2019. *Wildlife Society Bulletin* 43:93–101. Nest survival and managed housing, Eastern Purple Martin.
- 22 Donnelly and others 2021. *Ecosphere* 12(6):e03543. Migration networks, Sandhill Cranes.
- 23 Johnson and others 2021. *Frontiers in Environmental Science* 8:563431. Airborne environmental DNA and landscape change.
- 24 Collins and others 2022. *Waterbirds* 45:428–439. Roost sites and habitat selection, Sandhill Cranes.
- 25 Portillo-Quintero and others 2022. *Remote Sensing* 14:3780. Habitat extent trends, Southern High Plains.
- 26 Schilder and others 2022. *Journal of Wildlife Management* 86:e22146. Structural and functional landscape connectivity, Lesser Prairie-Chicken.
- 27 Buchholz and others 2023. *Journal of Fish and Wildlife Management* 14:27–40. Density of axis deer, Texas.
- 28 Donnelly and others 2024. *Ecology and Evolution* 14:e10998. Sandhill Cranes and flood-irrigated agriculture.
- 29 Greene and others 2024. *Journal of the Southeastern Association of Fish and Wildlife Agencies* 11:110–118. Brood ecology, Lesser Prairie-Chicken.
- 30 Lynn and others 2024. *Scientific Reports* 14:28175. Tick natural history, southern Arizona.
- 31 Dawsey and others 2025. *Landscape Ecology* 40:187. Graph theory and lek decline, Lesser Prairie-Chicken.
- 32 Lechnar and others 2025. *Rangeland Ecology & Management* 98:237–245. Postfire herbicide on Macartney rose.
- 33 Van Ee and others 2025. *Journal of Agricultural, Biological and Environmental Statistics* 30:769–799. Melded integrated population models.

Proceedings and technical work

- 34 Boal and others 2014. *U.S. Geological Survey Open-File Report* 2013-1235. Nest ecology under grassland restoration, Lesser Prairie-Chicken.
- 35 Grisham and others 2018. *Proceedings of the North American Crane Workshop* 14:1–9. Distribution map, Lower Colorado River Valley Sandhill Cranes.
- 36 Nowak and others 2018. *Proceedings of the North American Crane Workshop* 14:110–114. Mixing of two Greater Sandhill Crane populations, northeast Oregon.

TEACHING, TEXAS TECH UNIVERSITY

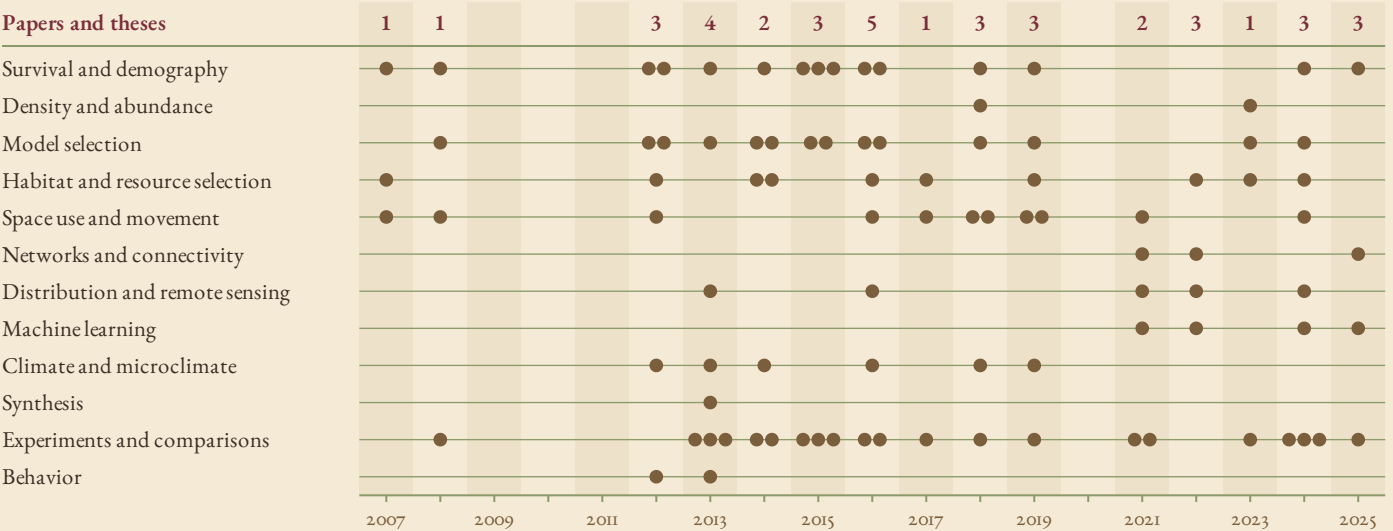
COURSE	LEVEL AND YEARS	WHAT IT COVERED
Wildlife Population Dynamics and Analysis (NRM 4408; scheduled as Population Dynamics and Estimation)	Undergraduate; every spring, 2015 to 2025	How wildlife populations change and how to measure them: exponential and logistic growth, harvest, life tables, and sensitivity analysis; abundance from counts and from distance sampling; Lincoln-Petersen and Cormack-Jolly-Seber capture-recapture; and known-fate and nest survival in Program MARK, with lab readings from published studies [3, 10, 18, 21, 27, 33].
Population Estimation and Dynamics (NRM 5309)	Graduate; every spring, 2015 to 2025	Estimation theory and modern analysis: indices, line transects, capture-recapture, Jolly-Seber models, survival, and life tables, with computer analysis.
Fish and Wildlife Population Modeling (NRM 5337)	Graduate; springs, 2013 to 2018	Building and using models to analyze and simulate fish and wildlife populations and communities: AICc model selection and model averaging; survival models (Cormack-Jolly-Seber, band recovery, known fate, nest, and young survival), mark-resight, multistate, and robust design models in Program MARK; occupancy in PRESENCE; distance sampling in DISTANCE; and growth, harvest, and Leslie matrix models. Student groups analyzed collaborators' field data, among them the Purple Martin nest records behind paper [21], and drafted manuscripts.
Climate Response Modeling (NRM 6002, selected topics)	Graduate; 2015	Combining quantitative methods from climate science and wildlife ecology: weather data and its quality control, climate projections, resource selection functions, random forest and Maxent habitat models, phenology models, survival and robust design models, and sensitivity, elasticity, and population viability analysis.
Wildlife Management Techniques (NRM 3407)	Undergraduate; summers, 2015 to 2022	Field methods for vegetation and wildlife surveys, taught as two weeks of field exercises: point counts, line transects, live capture, radio telemetry, camera traps, and vegetation sampling. Students collected, summarized, and graphed their own data in daily reports, from means and their uncertainty to density, home ranges, and habitat use.

THESES

- 37 Grisham 2007. *M.S. thesis, Louisiana State University*. Space use, habitat selection, and survival, Wild Turkey gobblers.
- 38 Grisham 2012. *Ph.D. dissertation, Texas Tech University*. Ecology, habitat management, and climate change, Lesser Prairie-Chicken, New Mexico and Texas.

THE ANALYSES BY YEAR

● one paper or thesis that used the method, at its year of publication. A paper that used several kinds of analysis has a dot in each of their rows. 3 the papers and theses of that year, each counted once. The numbers behind the dots are the brackets on page 1.



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